Annual Environmental Report

2022

Belgooly

D0541-01

CONTENTS

1 EXECUTIVE SUMMARY AND INTRODUCTION TO THE 2022 AER

This Annual Environmental Report has been prepared for D0541-01, Belgooly, in Cork in accordance with the requirements of the wastewater discharge licence for the agglomeration. Specified reports where relevant are included as an appendix to the AER.

1.1 ANNUAL STATEMENT OF MEASURES

A summary of any improvements undertaken is provided where applicable.

There was no major capital or operational changes undertaken

1.2 TREATMENT SUMMARY

- Cramers Close WWTP (TPEFF0500D0541SW002) with a Plant Capacity PE of 75, the treatment type is secondary RBC.
- Belgooly Secondary Discharge (TPEFF0500D0541SW003) is a direct discharge (untreated)
- Belgooly - Riverbank Estate WWTP with a Plant Capacity PE of 1000, the treatment type is 3P - Tertiary P removal .

1.3 ELV OVERVIEW

The overall compliance of the final effluent with the Emission Limit Values (ELVs) is shown below. More detailed information on the below ELV’s can be found in Section 2.

Discharge Point Reference	Treatment Plant	Discharge Type	Compliance Status	Parameters failing if relevant
TPEFF0500D0541SW003	Belgooly Secondary Discharge	Untreated	Non-Compliant	COD-Cr mg/l Suspended Solids mg/l
TPEFF0500D0541SW002	Cramers Close WWTP	Secondary Treatment	Non-Compliant	COD-Cr mg/l Suspended Solids mg/l
TPEFF0500D0541SW001	Belgooly - Riverbank Estate WWTP	Treated	Non-Compliant	Ammonia-Total (as N) mg/l ortho-Phosphate (as P) - unspecified mg/l

1.4 LICENCE SPECIFIC REPORTING

Assessment / Report
There are no Licence Specific Reports included in this AER.

2 TREATMENT PLANT PERFORMANCE AND IMPACT SUMMARY

2.1 BELGOOLY – SECONDARY DISCHARGE - UNTREATED DISCHARGE

2.1.1 EFFLUENT MONITORING SUMMARY - SW003

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	6	6	3	215	Fail
Suspended Solids mg/l	35	87.5	N/A	6	4	1	57	Fail
pH pH units	9	9	N/A	6	N/A	N/A	7.72	Pass
Faecal coliforms no./100mls	N/A	N/A	N/A	2	N/A	N/A	N/A	
Enterococci (Intestinal) no./100mls	N/A	N/A	N/A	2	N/A	N/A	14540	
BOD, 5 days with Inhibition (Carbonaceous mg/l)	25	50	N/A	6	N/A	N/A	74	Fail
E. Coli no./100mls	N/A	N/A	N/A	2	N/A	N/A	24197	

Notes:
1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 – For pH the WWDA specifies a range of pH 6 - 9

Cause of Exceedance(s):

Secondary discharge is not fully treated prior to discharge

Significance of Results:

Discharge is non compliant with WWDL ELVs

2.1.2 AMBIENT MONITORING SUMMARY FOR THE UNTREATED DISCHARGE TPEFF0500D0541SW003

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Upstream	166771,54081	RS20B690960	No	No	No	No	Good
Downstream	166300, 52125	TW05003164OY1001	No	No	No	Yes	Moderate

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient monitoring summary**

Significance of Results:

The coastal/transitional ambient monitoring results meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results do not meet the required EQS at the upstream monitoring location. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

The discharge from the wastewater treatment plant does not have an observable impact on the designated shellfish water quality.

2.2 BELGOOLY – CRAMERS CLOSE WWTP - TREATED DISCHARGE

2.2.1 EFFLUENT MONITORING SUMMARY - SW002

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	6	6	3	207	Fail
Suspended Solids mg/l	35	87.5	N/A	6	4	1	49	Fail
pH pH units	9	9	N/A	6	N/A	N/A	7.74	Pass
Enterococci (Intestinal) no./100mls	N/A	N/A	N/A	2	N/A	N/A	14540	
BOD, 5 days with Inhibition (Carbonaceous mg/l)	25	50	N/A	6	N/A	N/A	75	Fail

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
E. Coli no./100mls	N/A	N/A	N/A	2	N/A	N/A	24197	
Faecal coliforms no./100mls	N/A	N/A	N/A	2	N/A	N/A	N/A	

Notes:
1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 – For pH the WWDA specifies a range of pH 6 - 9

Cause of Exceedance(s):

Refer to Incident Section of Report

Significance of Results:

The WWTP is non compliant with the ELV's set in the Wastewater Discharge Licence. The impact on receiving waters is assessed further in Section 2

2.2.2 AMBIENT MONITORING SUMMARY FOR THE UNTREATED DISCHARGE TPEFF0500D0541SW002

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Upstream	166771,54081	RS20B690960	No	No	No	No	Good

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Downstream	166300, 52125	TW05003164OY1001	No	No	No	Yes	Moderate

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient monitoring summary**

Significance of Results:

The coastal/transitional ambient monitoring results meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results do not meet the required EQS at the upstream monitoring location. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The discharge from the wastewater treatment plant does not have an observable impact on the water quality.

The discharge from the wastewater treatment plant does not have an observable negative impact on the Water Framework Directive status.

The discharge from the wastewater treatment plant does not have an observable impact on the designated shellfish water quality.

2.3 BELGOOLY - RIVERBANK ESTATE WWTP - TREATED DISCHARGE

2.3.1 INFLUENT MONITORING SUMMARY - BELGOOLY - SW001 RIVERBANK ESTATE WWTP

A summary of influent monitoring for the treatment plant is presented below. This monitoring is primarily undertaken in order to determine the overall efficiency of the plant in removing pollutants from the raw wastewater.

Parameters	Number of Samples	Annual Max	Annual Mean
BOD, 5 days with Inhibition (Carbonaceous mg/l)	6	235	117

Parameters	Number of Samples	Annual Max	Annual Mean
COD-Cr mg/l	6	518	297
Suspended Solids mg/l	6	366	164
Hydraulic Capacity	N/A	899	198

If other inputs in the form of sludge / leachate are added to the WWTP then these are included in Section 2.1.5 if applicable.

Significance of Results:

The annual mean hydraulic loading is less than the peak Treatment Plant Capacity. The annual maximum hydraulic loading is greater than the peak Treatment Plant Capacity. Further details on the plant capacity and efficiency can be found under the sectional 'Operational Performance Summary'. The design of the wastewater treatment plant allows for peak values and therefore the peak loads have not impacted on compliance with Emission Limit Values.

2.3.2 EFFLUENT MONITORING SUMMARY - TPEFF0500D0541SW001

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
COD-Cr mg/l	125	250	N/A	6	N/A	N/A	33	Pass
Suspended Solids mg/l	35	87.5	N/A	6	N/A	N/A	7.59	Pass
BOD, 5 days with Inhibition (Carbonaceo mg/l	25	50	N/A	6	N/A	N/A	6.42	Pass
pH pH units	9	9	N/A	6	N/A	N/A	7.82	Pass

Parameter	WWDL ELV (Schedule A)	ELV with Condition 2 Interpretation included Note 1	Interim % reduction from influent concentration	Number of sample results	Number of exceedances	Number of exceedances with Condition 2 Interpretation included	Annual Mean	Overall Compliance (Pass/Fail)
Ammonia-Total (as N) mg/l	3	3.6	N/A	6	6	6	14	Fail
ortho-Phosphate (as P) - unspecified mg/l	1	1.2	N/A	6	6	6	1.61	Fail
E. Coli no./100mls	N/A	N/A	N/A	2	N/A	N/A	1058	
Enterococci (Intestinal) no./100mls	N/A	N/A	N/A	2	N/A	N/A	51	
Faecal coliforms no./100mls	N/A	N/A	N/A	2	N/A	N/A	1195	

Notes:
1 – This represents the Emission Limit Values after the Interpretation provided for under Condition 2 of the licence is applied
2 – For pH the WWDA specifies a range of pH 6 - 9

Cause of Exceedance(s):

Refer to Incident Section of Report

Significance of Results:

The WWTP is non compliant with the ELV's set in the Wastewater Discharge Licence. The impact on receiving waters is assessed further in Section 2

2.3.3 AMBIENT MONITORING SUMMARY FOR THE TREATMENT PLANT DISCHARGE TPEFF0500D0541SW001

A summary of monitoring from ambient monitoring points associated with the wastewater discharge is provided in the sections below. For discharges to rivers upstream (U/S) and downstream (D/S) location data is provided. For other ambient points in lakes, coastal or transitional waters, monitoring data from the most appropriate monitoring station is selected.

The table below provides details of ambient monitoring locations and details of any designations as sensitive areas.

Ambient Monitoring Point from WWDL (or as agreed with EPA)	Irish Grid Reference	River Station Code	Bathing Water	Drinking Water	FWPM	Shellfish	WFD Ecological Status
Upstream	166326, 54277	RS20S030800	No	No	No	No	Good
Upstream	166771,54081	RS20B690960	No	No	No	No	Good
Downstream	166300, 52125	TW05003164OY1001	No	No	No	Yes	Moderate

The results for ambient results and / or additional monitoring data sets are included in the **Appendix 7.1 - Ambient monitoring summary**

Significance of Results:

The coastal/transitional ambient monitoring results meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

The WWTP discharge was not compliant with the ELV's set in the wastewater discharge licence.

The ambient monitoring results meet the required EQS. The EQS relates to the Oxygenation and Nutrient Conditions set out in the Surface Water Regulations 2009.

Based on ambient monitoring results a deterioration in BOD, Ammonia, concentrations downstream of the effluent discharge is noted.

A deterioration in water quality has been identified, however it is not known if it is or is not caused by the WWTP.

Other causes of deterioration in water quality in the area are unknown.

The discharge from the wastewater treatment plant does have an observable negative impact on the Water Framework Directive status.

The discharge from the wastewater treatment plant does have an observable impact on the designated shellfish water quality.

2.3.4 OPERATIONAL PERFORMANCE SUMMARY - BELGOOLY - RIVERBANK ESTATE WWTP

2.3.4.1 Treatment Efficiency Report - Belgooly - Riverbank Estate WWTP

Treatment efficiency is based on the removal of key pollutants from the influent wastewater by the treatment plant. In essence the calculation is based on the balance of load coming into the plant versus the load leaving the plant. The efficiency is presented as a percentage removal rate.

A summary presentation of the efficiency of the treatment process including information for all the parameters specified in the licence is included below:

Parameter	Influent mass loading (kg/year)	Effluent mass emission (kg/year)	Efficiency (% reduction of influent load)
COD	22909	2672	88
TN	N/A	N/A	N/A
TP	N/A	N/A	N/A
cBOD	9030	514	94
SS	12641	608	95

Note: The above data is based on sample results for the number of dates reported

2.3.4.2 Treatment Capacity Report Summary - Belgooly - Riverbank Estate WWTP

Treatment capacity is an assessment of the hydraulic (flow) and organic (the amount of pollutants) load a treatment plant is designed to treat versus the current loading of that plant.

Belgooly - Riverbank Estate WWTP	
Peak Hydraulic Capacity (m^3/day) - As Constructed	675
DWF to the Treatment Plant (m^3/day)	225

Belgooly - Riverbank Estate WWTP	
Current Hydraulic Loading - annual max (m^3/day)	899
Average Hydraulic loading to the Treatment Plant (m^3/day)	198.3
Organic Capacity (PE) - As Constructed	1000
Organic Capacity (PE) - Collected Load (peak week)[Note1]	855
Organic Capacity (PE) - Remaining	145
Will the capacity be exceeded in the next three years? (Yes/No)	No

Nominal design capacities can be based on conservative design principles. In some cases assessment of existing plants has shown organic capacities significantly higher than the nominal design capacity. Accordingly plants that appear to be overloaded when comparing a collected peak load with the nominal design capacity can be fully compliant due to the safety factors in the original design.

2.3.5 SLUDGE / OTHER INPUTS - BELGOOLY - RIVERBANK ESTATE WWTP

'Other inputs' to the waste water treatment plant are summarised in table below

Input type	Quantity	Unit	P.E.	% of load to WWTP	Included in Influent Monitoring (Y/N)?	Is there a leachate/sludge acceptance procedure for the WWTP?	Is there a dedicated leachate/sludge acceptance facility for the WWTP? (Y/N)
There is no Sludge and Other Input data for the Treatment Plant included in the AER.							

3 COMPLAINTS AND INCIDENTS

3.1 COMPLAINTS SUMMARY

A summary of complaints of an environmental nature related to the discharge(s) to water from the WWTP and network is included below.

Number of Complaints	Nature of Complaint	Number Open Complaints	Number Closed Complaints
There were no relevant environmental complaints in 2022.			

3.2 REPORTED INCIDENTS SUMMARY

Environmental incidents that arise in an agglomeration are reported on an on-going basis in accordance with our waste water discharge licences. Where an incident occurs and it is reportable under the licence, it is reported to the Environmental Protection Agency through their Environmental Data Exchange Network, or in some instances by telephone. Some incidents which arise in the agglomeration are recorded by Uisce Éireann but may not be reportable under our licence for example where the incident does not have an impact on environmental performance.

A summary of reported incidents is included below.

3.2.1 SUMMARY OF INCIDENTS

Incident Type	Cause	No. of incident occurrences	Recurring (Y/N)	Closed (Y/N)
Breach of ELV	WWTP upgrade required to meet ELV	1	Yes	No

3.2.2 SUMMARY OF OVERALL INCIDENTS

Question	Answer
Number of Incidents in 2022	1
Number of Incidents reported to the EPA via EDEN in 2022	1
Explanation of any discrepancies between the two numbers above	N/A

4 INFRASTRUCTURAL ASSESSMENTS AND PROGRAMME OF IMPROVEMENTS

4.1 STORM WATER OVERFLOW IDENTIFICATION AND INSPECTION REPORT

A summary of the operation of the storm water overflows and their significance where known is included below:

4.1.1 SWO IDENTIFICATION

WWDL Name / Code for Storm Water Overflow (chamber) where applicable	Irish Grid Ref. (outfall)	Included in Schedule of the WWDL	Significance of the overflow(High / Medium / Low)	Assessed against DoEHLG Criteria	No. of times activated in 2022 (No. of events)	Total volume discharged in 2022 (m3)	Monitoring Status
There are no Storm Water Overflows in this Agglomeration.							

Any TBC SWO(s) were identified as part of the on-going National SWO programme and will be updated in subsequent AER(s) once the information is confirmed.

SWO Summary	
How much sewage was discharged via monitored SWOs in the agglomeration in the year (m3)?	Unknown
Is each SWO identified as not meeting DoEHLG Guidance included in the Programme of Improvements?	N/A
The SWO Assessment included the requirements of relevant of WWDL schedules?	N/A
Have the EPA been advised of any additional SWOs / changes to Schedule C3 and A4 under Condition 1.7?	N/A

4.2 REPORT ON PROGRESS MADE AND PROPOSALS BEING DEVELOPED TO MEET THE IMPROVEMENT PROGRAMME REQUIREMENTS.

4.2.1 SPECIFIED IMPROVEMENT PROGRAMME SUMMARY

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides a list of the various reports required for this agglomeration and a brief summary of their recommendations.

Specified Improvement Programmes (under Schedule A and C of WWDL)	Description	Licence Schedule	Licence Completion Date	Date Expired? (N/NA/Y)	Status of Works	Timeframe for Completing the Work	Comments
D0541-SIP:01	Improvements to ensure compliance with the ELVs as specified in Schedule A by 31/12/2019	C	31/12/2019	Yes	At Planning Stage		
D0541-SIP:02	Provide sufficient capacity in the wastewater works to satisfy the requirements of this licence	C	31/12/2019	Yes	At Planning Stage		
D0541-SIP:03	SW002 Secondary Discharge Point to be Discontinued	C	31/12/2019	Yes	At Planning Stage		
D0541-SIP:04	SW003 Secondary Discharge Point to be discontinued	C	31/12/2019	Yes	At Planning Stage		

A summary of the status of any other improvements identified by under Condition 5 assessments- is included below.

4.2.2 IMPROVEMENT PROGRAMME SUMMARY

Improvement Identifier	Improvement Description / or any Operational Improvements	Improvement Source	Expected Completion Date	Comments
No additional improvements planned at this time.				

4.2.3 SEWER INTEGRITY RISK ASSESSMENT

N/A

5 LICENCE SPECIFIC REPORTS

A wastewater discharge licence may require a number of reports on specific subject areas to be prepared for the agglomeration in question. These reports are submitted to the EPA as part of the Annual Environmental Report. This section provides a list of the various reports required for this agglomeration and a brief summary of their recommendations.

Licence Specific Report	Required by licence	Year included in AER	Included in this AER
Priority Substances Assessment	Yes	2015	No
Shellfish Impact Assessment	Yes		No

6 CERTIFICATION AND SIGN OFF

6.1 SUMMARY OF AER CONTENTS

Parameter	Answer
Does the AER include an Executive Summary?	Yes
Does the AER include an assessment of the performance of the Waste Water Works (i.e. have the results of assessments been interpreted against WWDL requirements and or Environmental Quality Standards)?	Yes
Is there a need to advise the EPA for Consideration of a Technical Amendment/Review of the Licence?	No
List reason e.g. additional SWO identified	N/A
Is there a need to request/advise the EPA of any modification to the existing WWDL with respect to condition 4 changes to monitoring location, frequency etc	No
List reason e.g. changes to monitoring requirements	N/A
Have these processes commenced?	N/A
Are all outstanding reports and assessments from previous AERs included as an appendix to this AER	N/A

I certify that the information given in this Annual Environmental Report is truthful, accurate and complete:

Signed: Date: 06/06/2023

This AER has been produced by Uisce Éireann's Environmental Information System (EIMS) and has been electronically signed off in that system for and on behalf of ,

Eleanor Roche

Acting Head of Environmental Regulation.

7 APPENDIX

Appendix
Appendix 7.1 - Ambient monitoring summary

Ambient Monitoring Point from WWDL (or as agreed with EPA)	*Irish Grid Reference*	EPA Feature Coding Tool code	Receiving Waters Designation (Y/N)				WFD Status
			Bathing Water	Drinking Water	FWPM	Shellfish	
RS20B690960	166771,54081	TPEFF0500D0541SW001	No	No	No	No	Good
RS20S030800	166326, 54277	TPEFF0500D0541SW001	No	No	No	No	Good
TW05003164OY1001	166300, 52125	TPEFF0500D0541SW001	No	No	No	Yes	Moderate

Ambient Impact Assessment Table

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	%EQS
cBOD mg/l	RS20B690960	2.25	TW05003164OY1001	2.16	4	
Ortho-Phosphate (as P) mg/l	RS20B690960	0.029	TW05003164OY1001	0.028	0.06	
Ammonia (as N) mg/l	RS20B690960	0.023	TW05003164OY1001	0.055		
pH pH units	RS20B690960	8.0	TW05003164OY1001	8.0		
Dissolved Oxygen %saturation or mg/l	RS20B690960	98.9	TW05003164OY1001	105.0		
Suspended Solids mg/l	RS20B690960	13.7	TW05003164OY1001	26.3		
Total Nitrogen (as N) mg/l						
Total Phosphorus (as P) mg/l						
Dissolved Inorganic Nitrogen (as N) mg/l						
Total Oxidised Nitrogen (as N) mg/l						

Ambient Impact Assessment Table

Parameter Name	Upstream Monitoring Point Location	Upstream Monitoring Point Annual Mean	Downstream Monitoring Point Location	Downstream Monitoring Point Annual Mean	EQS	%EQS
cBOD mg/l	RS20S030800	1.38	TW05003164OY1001	2.16	4	
Ortho-Phosphate (as P) mg/l	RS20S030800	0.017	TW05003164OY1001	0.028	0.06	
Ammonia (as N) mg/l	RS20S030800	0.015	TW05003164OY1001	0.055		
pH pH units	RS20S030800	7.7	TW05003164OY1001	8.0		
Dissolved Oxygen %saturation or mg/l	RS20S030800	100	TW05003164OY1001	105.0		
Suspended Solids mg/l	RS20S030800	3.9	TW05003164OY1001	26.3		
Total Nitrogen (as N) mg/l						
Total Phosphorus (as P) mg/l						
Dissolved Inorganic Nitrogen (as N) mg/l						
Total Oxidised Nitrogen (as N) mg/l						